Claims

1. A method for imaging of at least one object, comprising the following steps:
- collecting image information about a sample by means of a microscope,
- selecting a part of said sample to be imaged (as a volume)
- reconstructing the collected image information for said volume using an iterative reconstruction method in which a prior prejudice distribution is refined in at least one step on the basis of a comparison with the collected image information

2. A method according to claim 1, further comprising the steps of
- selecting at least one object within said volume
- analyzing a part of the image information related to said at least one object.

3. A method according to any one of the preceding claims, wherein said reconstruction method is based on the COMET technology

4. A method according to any one of the preceding claims, further comprising the step of selecting the at least one object in dependence of the shape and/or size of the object.

5. A method according to any one of the preceding claims further comprising the step of exposing the sample to markers before collecting the image information.

6. A method according to any one of the preceding claims further comprising the step of measuring the information content of the reconstructed image information.

7. A method according to any one of the preceding claims wherein the step of collecting image information comprises collecting several 2D-images and further comprising the steps of aligning the 2D-images.

8. A method according to any one of the preceding claims wherein the step of reconstructing the collected image information comprises reconstructing 3D-data from said 2D-images without deconvoluting the point spread function.

9. A method according to any one of the claims 1-7, wherein the step of reconstructing the collected image information comprises reconstructing 3D data from said 2D-images including deconvoluting the point spread function

10. A method according to any one of the claims 1-7, wherein the step of reconstructing the collected image information comprises first deconvoluting the point spread function for the 2D-images and then reconstructing 3D-data without deconvoluting the point spread function.

11. A method according to any one of the preceding claims, further comprising the step of preparing the sample by means of cryomicrotomy.

12. A method according to any one of the preceding claims, further comprising the step of preparing the sample by means of flash freezing.

13. A method according to any one of the preceding claims further comprising the step of displaying the reconstruction on a computer screen.

14. An apparatus for imaging of at least one object comprising the following steps:

- means for receiving image information collected by means of a microscope,
- means selecting a part of said sample to be imaged (as a volume)
- means for reconstructing the collected image information for said volume using an iterative reconstruction method in which a prior prejudice distribution is refined in at least one step on the basis of a comparison with the collected image information

15. An apparatus according to claim 14, further comprising

- means for selecting at least one object within said volume
- means for analyzing a part of the image information related to said at least one object.

16. An apparatus according to any one of claims 14-15, wherein said means for reconstructing the collected image information is arranged to apply a reconstruction method based on the COMET technology.

17. An apparatus according to any one of the claims 14-16, further comprising means for selecting the at least one object in dependence of the shape and/or size of the object.

18. An apparatus according to any one of the claims 14-17, further comprising measuring means (11) for measuring the information content of the reconstructed image information.

19. An apparatus according to any one of the claims 14-18, further comprising aligning means for aligning several 2D-images related to a sample.

20. An apparatus according to any one of the claims 14-19, wherein said reconstruction (9) means for reconstructing the collected image information is arranged to reconstruct 3D-data from said 2D-images without deconvoluting the point spread function.

21. An apparatus according to any one of the claims 14-20, wherein the means for reconstructing the collected image information is arranged to reconstruct 3D data from said 2D-images including deconvoluting the point spread function.

22. An apparatus according to any one of the claims 14-21, wherein the means for reconstructing the collected image information is arranged to first deconvolute the point spread function for the 2D-images and then reconstruct 3D-data without deconvoluting the point spread function.

23. An apparatus according to any one of the claims 14-22, further comprising data processing means (11) for measuring the information content of the reconstruction produced by the first computer program (9).

24. An apparatus according to any one of the claims 14-22, further comprising auxiliary memory means (7) for storing other data regarding the sample.

25. An apparatus according to any one of the claims 14-22, further comprising structure memory means (8) for storing prior structure data.

26. An apparatus according to any one of the claims 14-22, further comprising data processing means (15) for combining the reconstructed or measured data output from the first computer program (6) with the prior structure data comprised in the structure data base (8) to refine the reconstructed image.